EMCal and PbGl Resolution

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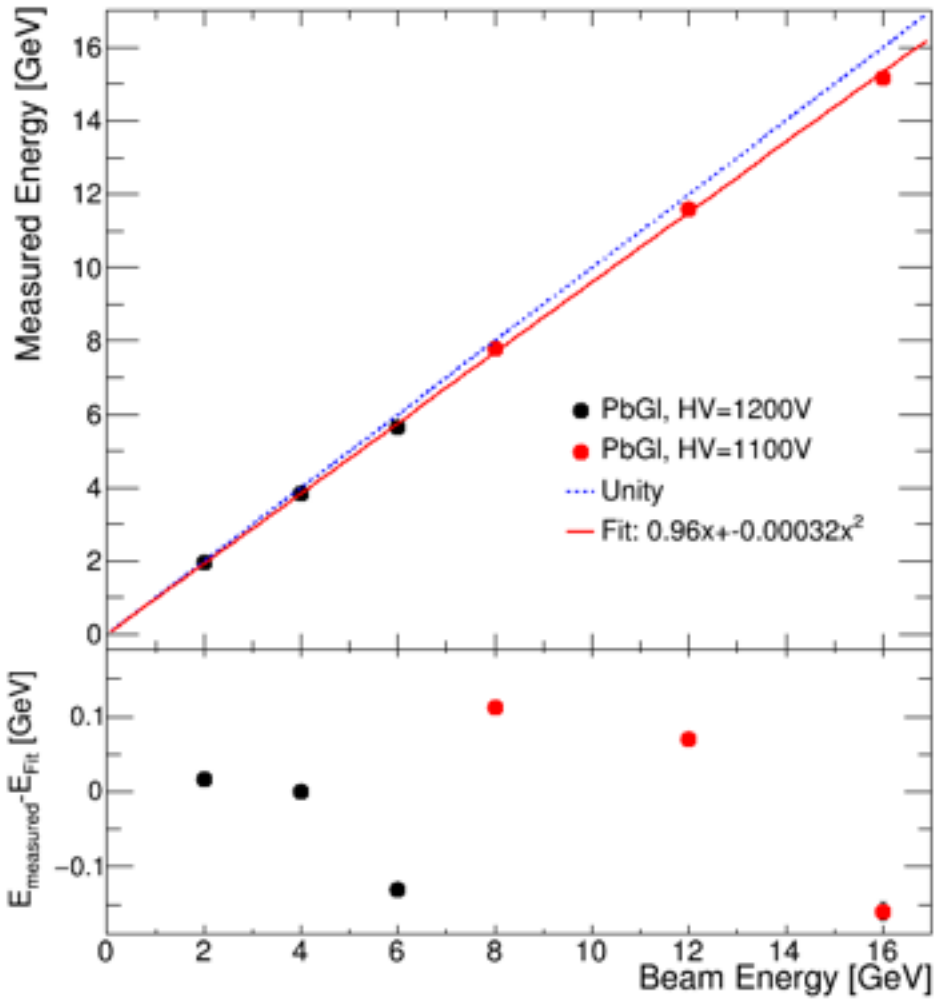
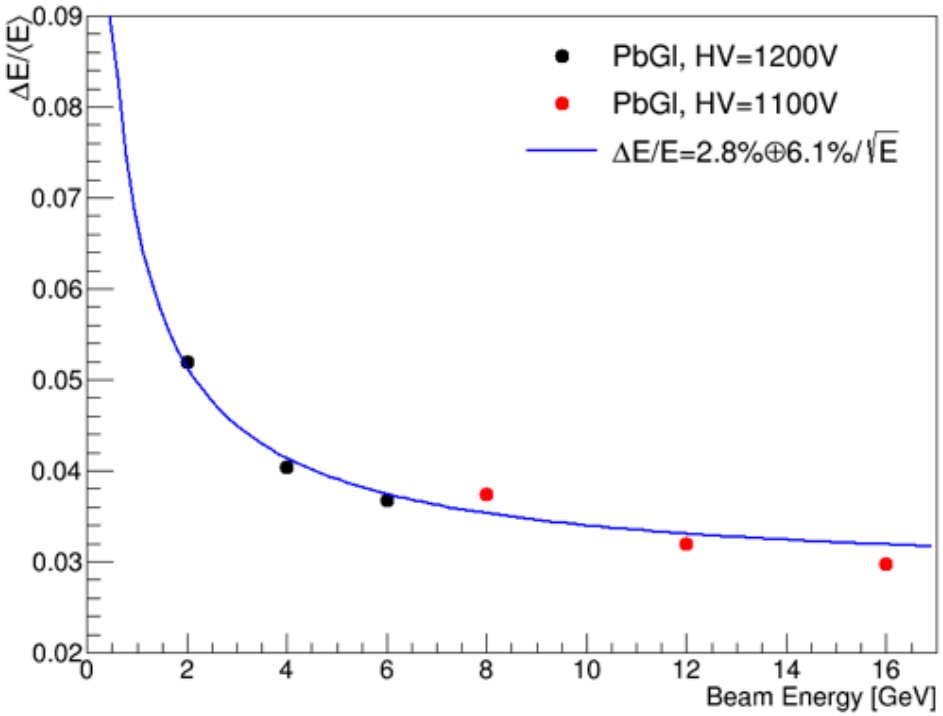
Overview

- Last week I was at FNAL for the test beam
- Started resolution analysis of PbGl detector as well as EMCal in dedicated energy scans
- Used Jin's ShowerCalib module for the EMCal analysis and my own analysis for the PbGl

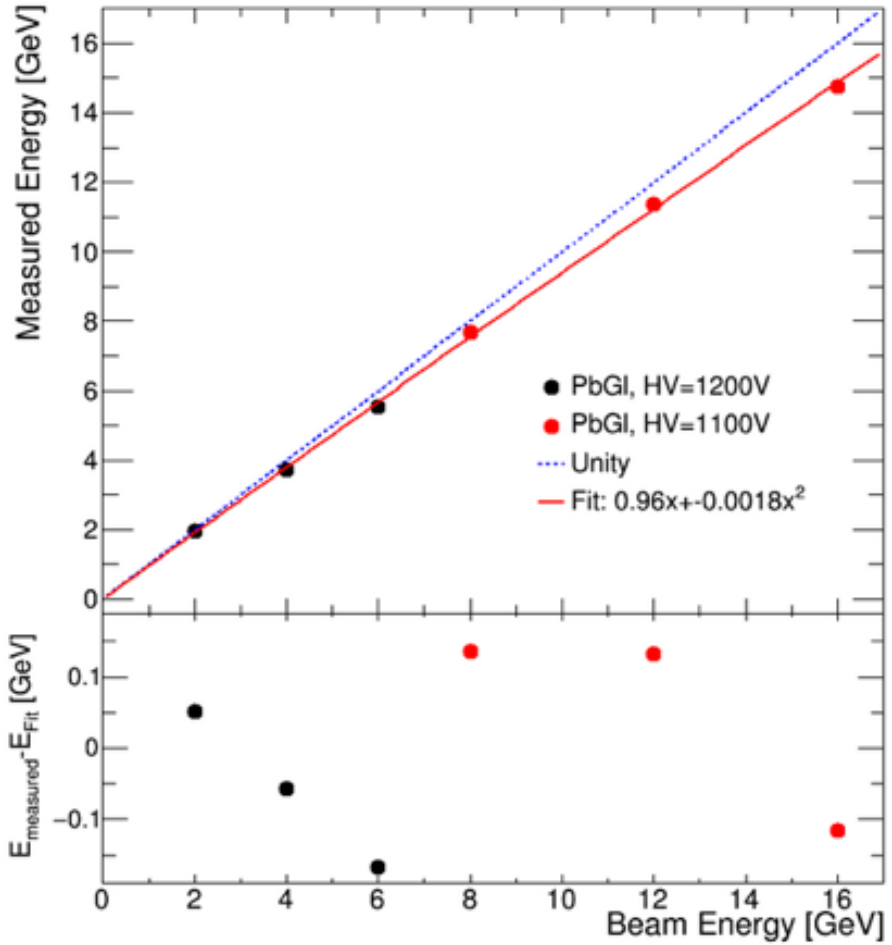
PbGl Dedicated Run

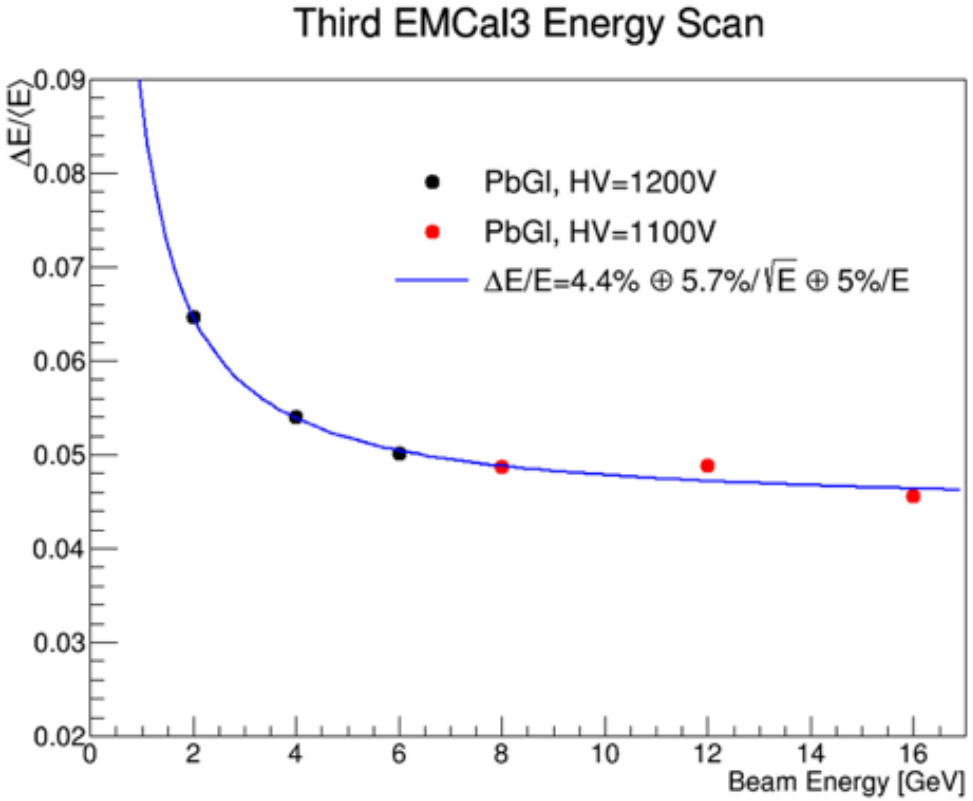




- Linearity and resolution look as expected
- Require C1 energy cut as well as vertical and horizontal hodoscope cuts
- Note: 8 GeV run at HV=1200 V (run 3325) not used as ADCs were saturated (suggestion from John and Craig)

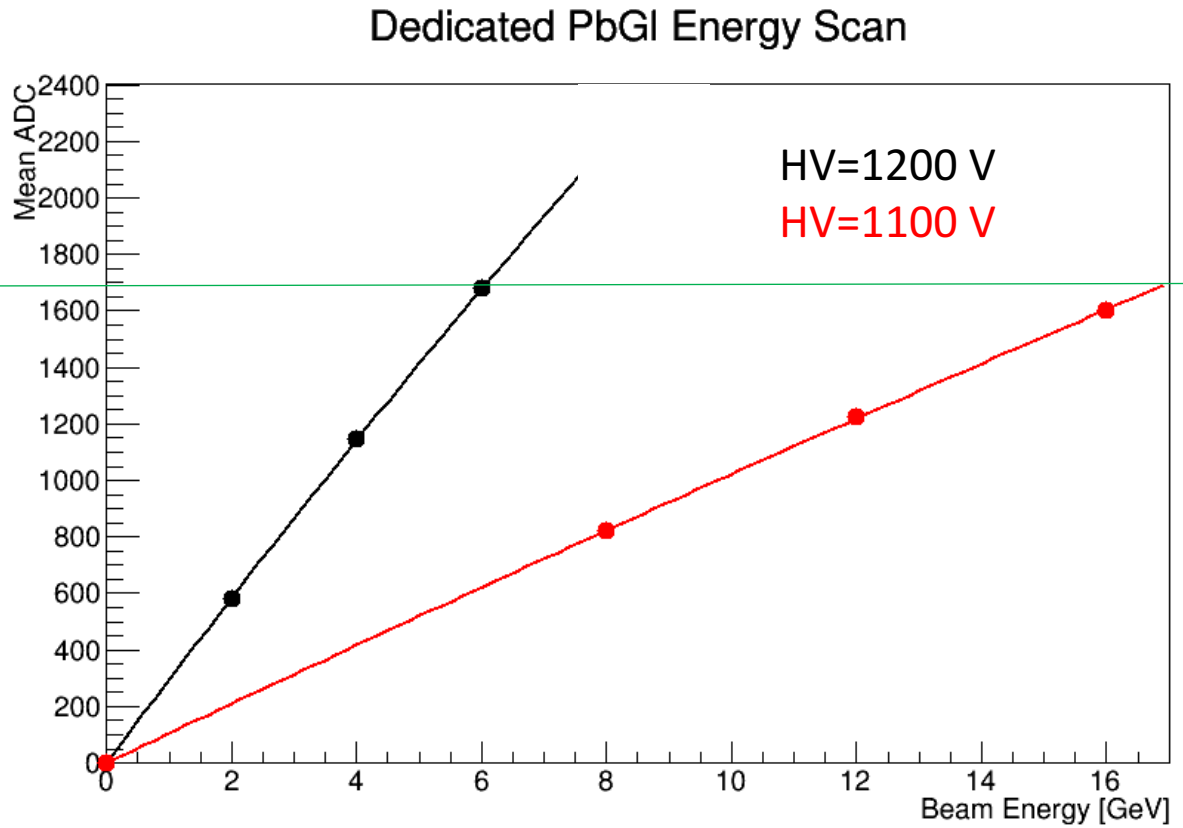
PbGl in the 3rd EMCal Energy Scan

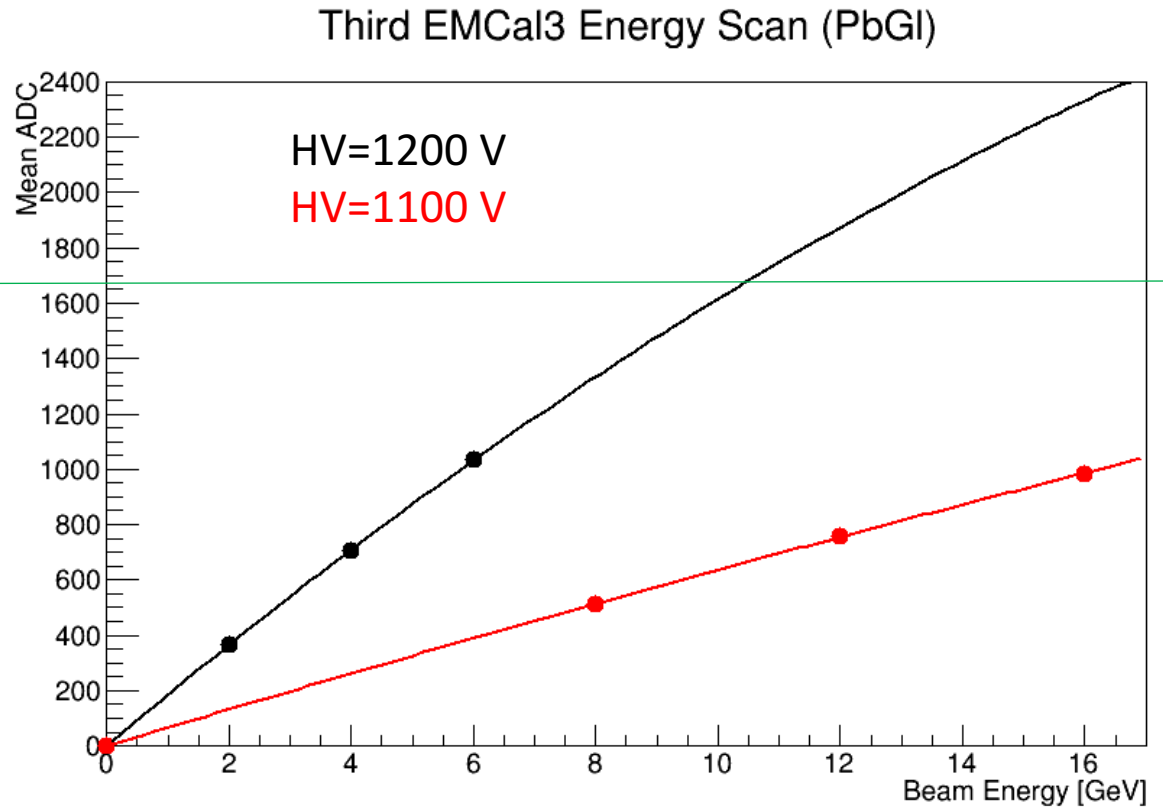




- Linearity similar to dedicated PbGl runs
- Resolution has non-negligible 1/E term? Also constant term larger?

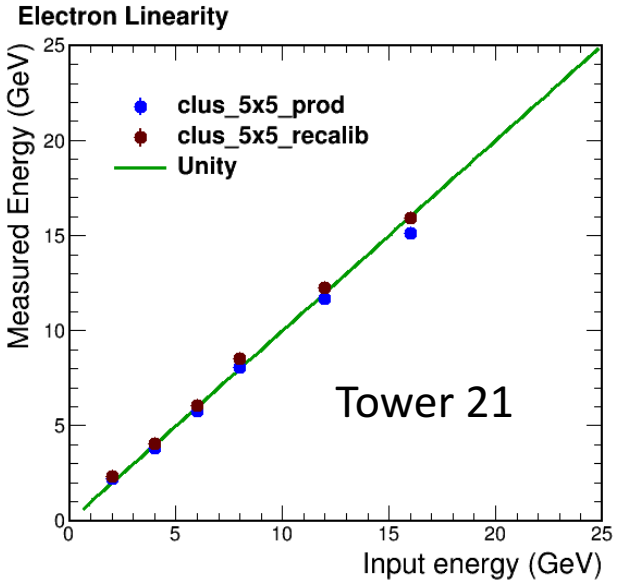
Cause of the difference?

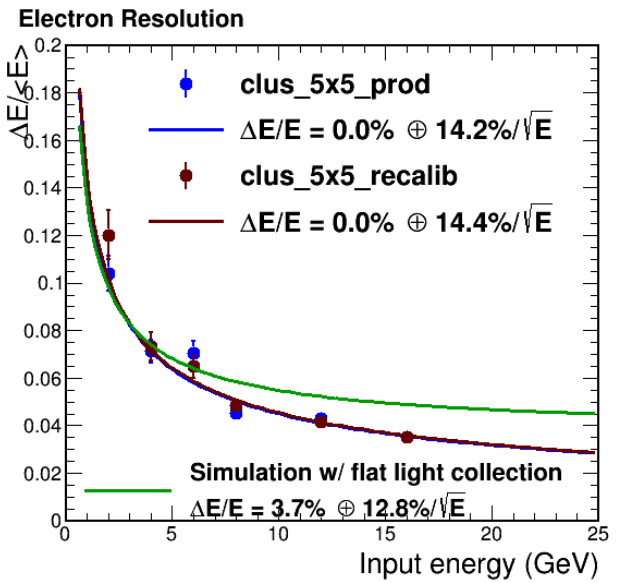


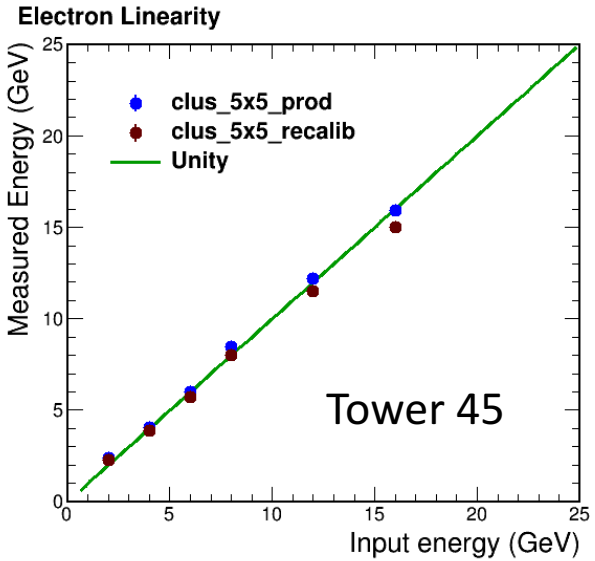


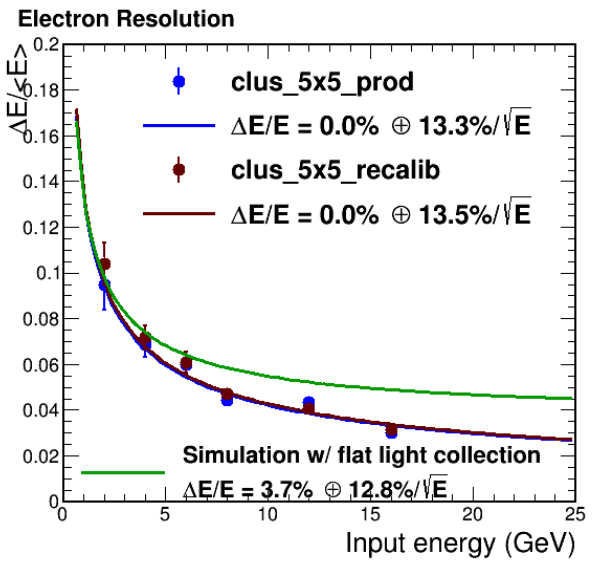
- Mean ADCs are significantly different between the two run sets
- Gains were turned down in PbGl for the 3rd EMCal energy scan
- 1/E term due to lower signal to background ratio from smaller gains?

EMCal 3rd Energy Scan Resolution (1x1 hodoscope cut)



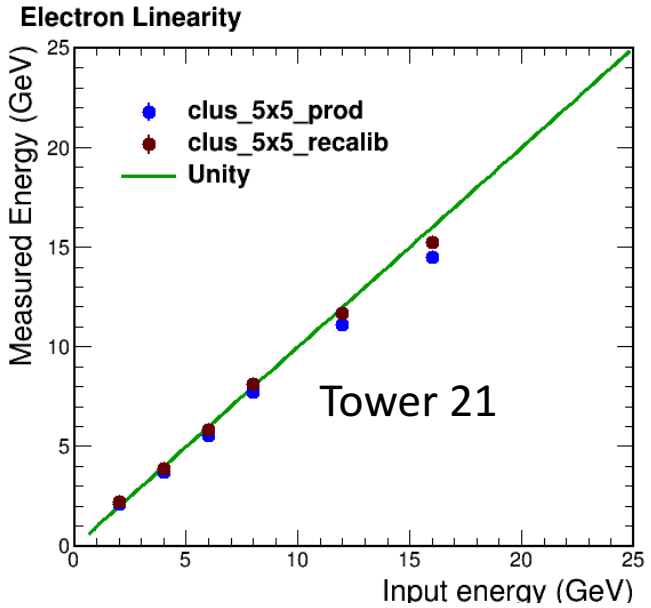


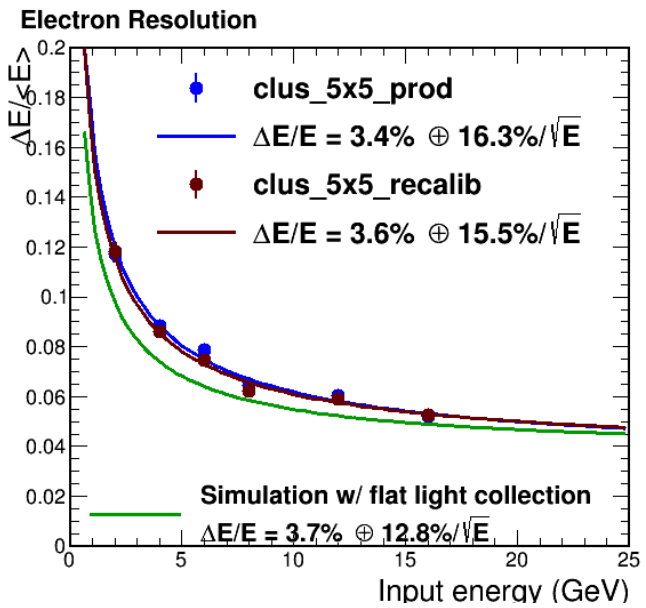


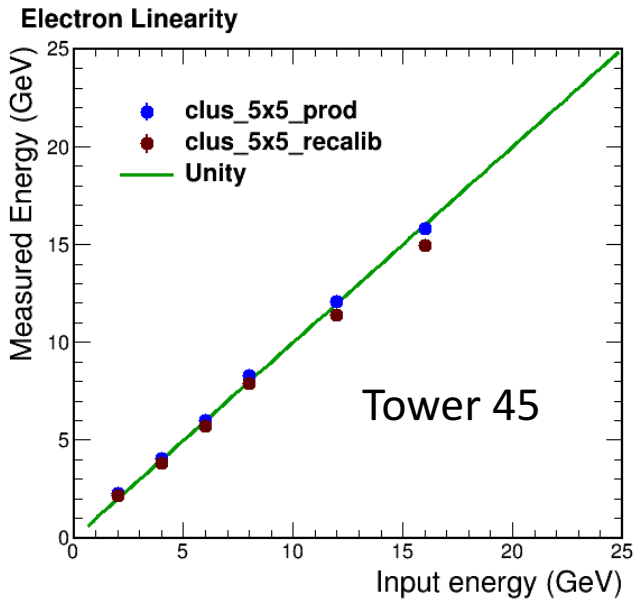


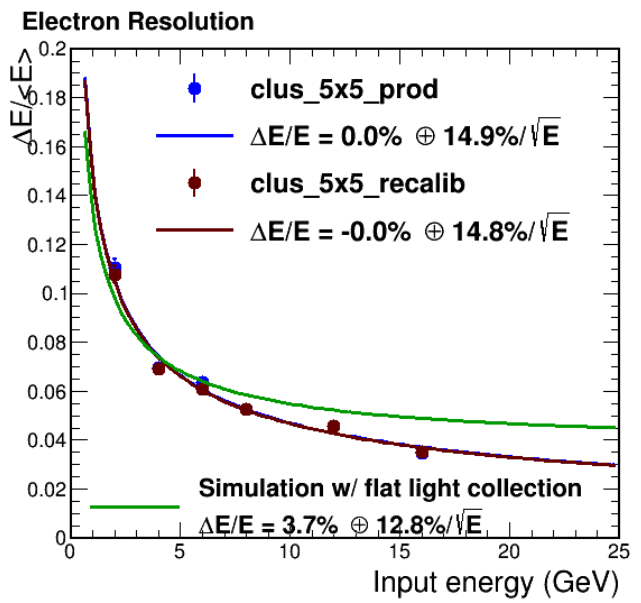
- 16 GeV point seems to pull constant term down to 0%?
- It seems systematically low
- Discussed with Jin briefly at the test beam

EMCal 3rd Energy Scan Resolution (2x3 hodoscope cut)









Summary

- Will continue to work on analyzing new runs, e.g. joint runs with HCAL as they come in and are produced
- Need to update wiki page with new plots – current plots under third EMCal energy scan had no recalibration and had only ~1/2 the production